Demonstration of a Persistent Mode Superconductive Coil Fabricated by Wind-and-Flip Technique using Coated Conductor

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Wind-and-flip technique has been developed in order to use coated conductor for the favrication of a persistent mode superconducting coils which can be applied for and NMR magnets. Middle of a long-length coated conductor was sliced in the middle along the conductor length. Supercurrent was confirmed from a sliced coated conductor by measuring the magnetic field coming out from a small piece of a sliced coated conductor due to an existence of persistent current. Pair of pan-cake coils was wound using a sliced coated conductor and flipped one of the coils in order to align the direction of the magnetic field from both coils. It shows that construction of pan-cake and solenoid coil without any joint is possible using coated conductor. It is also appeared that many sets of pancakes and solenoid coils can be fabricated from a wide coated conductor by slicing into many strips consisting a closed loop. Wind-and-flip technique for fabricating superconducting coil for persistent mode operation is suggested and the results of demonstrating pancake coil prepared by short length of coated conductor will be reported. It is thought that this work opens the possibility to use coated conductor for the construction of persistent mode high T_c magnets for MRI, NMR and magnetic separation applications.

Keywords : coated conductor, Wind-and-flip, pan-cakes

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